

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	East- ern stand- ard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate qual- ity	Observatory
			Dif- ference in longi- tude	Lon- gi- tude	Lat- tude	Dis- tance from center of disk				
1939 Oct. 30...	h m		°	°	°	°				
	10 39	6658	-58	223	-14	62	12	2	VG	Mt. Wilson.
		6656	-32	249	-10	34	48	9		
		6656	-30	251	-7	33	194	8		
		6657	-25	256	+5	25	824	52		
		6655	-15	266	+22	23	194	14		
		6652	+29	310	+14	31	145	14		
		6654	+33	314	+4	34	6	3		
		6648	+57	338	-8	58	24	2		
		6648	+63	344	-9	64	727	20		
		6648	+68	349	-9	70	73	7		
			(281)	(+5)			2, 247	131		
Oct. 31...	11 7	6660	-68	200	+22	69	16	3	P	Do.
		6658	-45	223	-14	49	12	2		
		6656	-19	249	-10	24	48	6		
		6656	-17	251	-7	20	170	4		
		6657	-11	257	+7	16	679	30		
		6655	-3	265	+22	18	145	6		
		6659	+48	316	-6	50	6	1		
		6648	+78	346	-8	80	582	9		
			(268)	(+4)			1, 658	61		

Mean daily area for 29 days=2,131.

* = not numbered.

VG=very good; G=good; F=fair; P=poor.

PROVISIONAL SUNSPOT RELATIVE NUMBERS FOR OCTOBER 1939

[Dependent alone on observations at Zurich]

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

October 1939	Relative numbers	October 1939	Relative numbers	October 1939	Relative numbers
1.....	ad 144	11.....	56	21.....	a —
2.....	a 143	12.....	Eac —	22.....	d 94
3.....	—	13.....	a —	23.....	—
4.....	aa 92	14.....	Eac 68	24.....	a 112
5.....	—	15.....	Ec 73	25.....	bd —
6.....	ad —	16.....	68	26.....	d 100
7.....	—	17.....	a 79	27.....	—
8.....	d —	18.....	Eacd 74	28.....	a 64
9.....	77	19.....	d 92	29.....	Ec 81
10.....	67	20.....	95	30.....	85
				31.....	a —

Mean, 19 days=87.6

a = Passage of an average-sized group through the central meridian.

b = Passage of a large group through the central meridian.

c = New formation of a group developing into a middle-sized or large center of activity; E, on the eastern part of the sun's disk; W, on the western part; M, in the center-circle zone.

d = Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE, in charge]

By B. FRANCIS DASHIELL

The establishment of a widespread network of radiosonde observations became an accomplished fact during October with the opening of additional stations at Juneau and Fairbanks, Alaska, and Lakehurst, N. J.; the latter being changed by the United States Navy from an airplane station. For the first time, regularly scheduled daily observations of pressure, temperature and humidity, in the high levels above 28 radiosonde stations, extended from Alaska to the Caribbean. These stations are listed in table 1a, and the observations of the United States Navy by airplanes at 7 stations are given in table 1. Charts VIII, IX, X, and XI show the mean pressures and temperatures, as well as the resultant winds, at 1.5, 3, 4, and 5 kilometers, respectively. The pressures shown on chart VIII are for 5,000 feet only. Tables 2 and 3 list certain wind data, and table 4 shows the heights of the tropopause. Isentropic data for October are shown on chart XII. A detailed description of the charts and tables was given in the January 1939 issue of the MONTHLY WEATHER REVIEW.

The mean free-air pressures for the current month for 5,000 feet, and 3, 4, and 5 kilometers, were well distributed. Highest pressure was indicated over the Southeast, being located at Pensacola, Fla., at 5,000 feet, and 3 and 4 kilometers, and over Miami, Fla., at 5 kilometers. Lowest mean pressure existed over the northern portion of the United States, being indicated at Sault Ste. Marie, Mich. To the south of the high-pressure area diminishing pressures were noted over Puerto Rico and Swan Island. Above 5 kilometers, where observations were made by radiosondes, lowest pressures prevailed along the northern border. These were centered over Sault Ste. Marie, Mich., up to 14 kilometers, and over Bismarck, N. Dak., in the higher levels. Lowest pressures occurred over Alaska, being lower at Fairbanks than at any station in the United States. Above 5 kilometers the highest mean pressures were noted over Miami, Fla., up to 11

kilometers, and then equalled by San Juan, P. R. Pressures over Swan Island were lower than those recorded at either Miami, Fla., or San Juan, P. R.

Mean pressures at stations using radiosonde in 1938 showed the current month to be lower than in October 1938 at all levels over Nashville, Tenn., Oklahoma City, Okla., Omaha, Nebr., and Sault Ste. Marie, Mich. The pressures at Nashville, Tenn., were very little lower than the previous year, but those at Sault Ste. Marie, Mich. became lower by a difference of 5 millibars at the surface to 10 millibars at 8 kilometers, then decreased with altitude to 2 millibars at 18 kilometers. Over Oakland, Calif., the current mean pressure was higher than in 1938 from the surface up to 11 kilometers, and then lower above. At Washington, D. C., the 1939 means were higher at all levels, the difference also becoming greatest at 8 kilometers.

During October the pressure differences at all levels between the southeastern HIGH (Miami, Fla.), and the northern LOW (Sault Ste. Marie, Mich.), showed a gradient increasing with altitude from 4 millibars at 500 meters to 25 millibars at 8 kilometers, and decreasing with additional altitude to 6 millibars at the maximum height of 17 kilometers. Also, a parallel case existed between the low-pressure area over Sault Ste. Marie, Mich., and the still lower one over Fairbanks, Alaska. In both cases the maximum gradient in millibars occurred at 8 kilometers. The pressure differences in millibars for all levels averaged 45 percent of those noted between Miami, Fla., and Sault Ste. Marie, Mich. And, as an interesting incidental, the difference in latitude between Fairbanks, Alaska, and Sault Ste. Marie, Mich., also is 45 percent of the difference between the latter place and Miami, Fla.

Mean relative humidities were high in the northern sections of the country (Sault Ste. Marie, Mich., Billings, Mont., Bismarck, N. Dak., and Spokane, Wash.). But outside of the United States proper the highest humidities